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Animal Health MATTERS Newsletter

Veterinary and Biomedical Sciences

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Animal Health MATTERS

Russ Daly
South Dakota State University

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Animal Health MATTERS

April 2009



Head/Director's Message — ADRDL: The R is for Research

David H. Zeman, DVM, PhD

Back in 1967, the founding fathers of the "modern" South Dakota Animal Disease Research and Diagnostic Laboratory (ADRDL) wisely inserted an R into our name. That R stands for *research*. The rationale for this was simple: the ongoing battle to control animal disease involves two key steps. The first is the creation of precise *diagnostic* data, the D in our name. To manage a health issue well, we need to know exactly what disease or diseases we are dealing with. The second step deals with the ultimate goal of disease control or eradication. That step is more of a long and tortuous process of discovery by trial, error and experimentation; a process we simply refer to as research. That wise insight of our founders proved that diagnostic and research activities are highly synergistic. New clinical syndromes observed by producers and veterinary practitioners, become diagnostic submissions, that become new pathological syndromes with lesions that explain the clinical signs, that become new research projects to clarify the precise etiological agents and factors of the new disease, followed by additional research projects to create improved diagnostic assays. The diagnostic laboratory is stronger because of our research mission and vice versa.

Last month our Veterinary Science Department's *research* unit attracted the attention of scientists throughout the region when their collaborations led to a personal visit by the 2008 co-winner of the Nobel Prize in Medicine, Dr. Luc



From left to right: Dr. David Zeman; Nobel Laureate Dr. Luc Montagnier; Dr. Alan Young, VSD Researcher.

Veterinary Science Department's Young to Collaborate with Nobel Prize Winner

Nobel Prize winner Dr. Luc Montagnier and South Dakota State University scientist Alan Young plan to work together in research focused on the early stages of disease.

A company called Chronix Biomedical Inc. that already collaborates with both Montagnier and Young brought the two together.

Montagnier, a French virologist who

shared the 2008 Nobel Prize in Physiology or Medicine for his role in the discovery of the HIV virus, was at SDSU Feb. 12 to discuss possible collaborations with Young, an associate professor in SDSU's Department of Veterinary Science.

Nobel Prize Winner

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R is for Research (Continued on page 5)

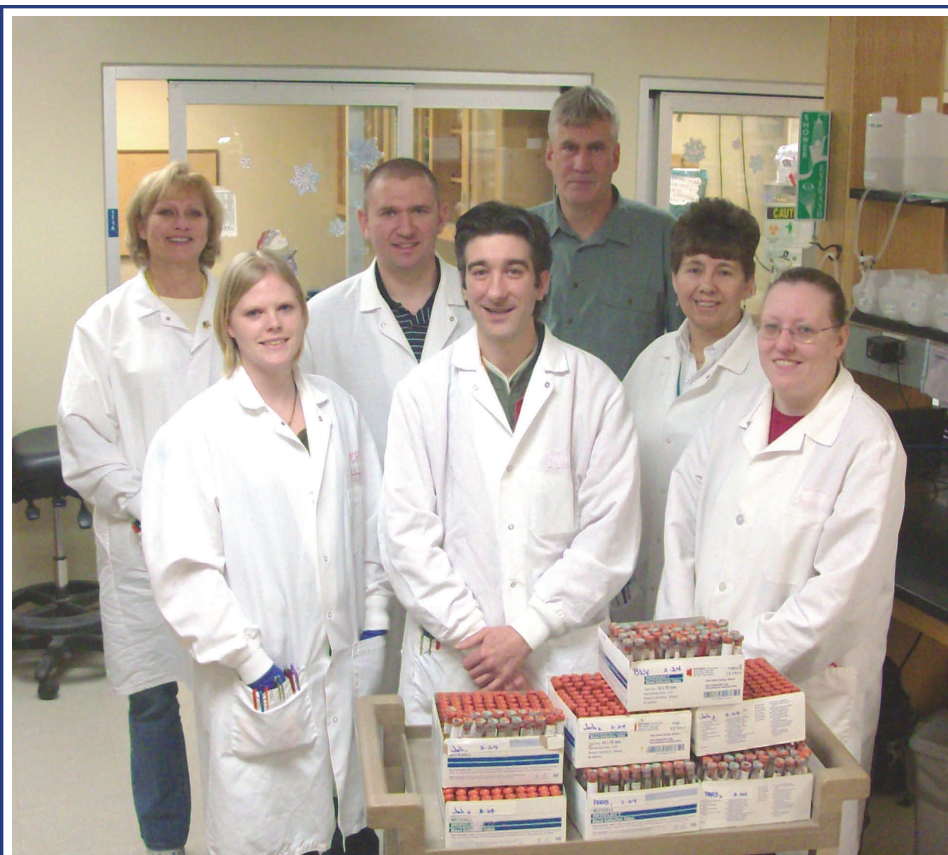
Inside the Serology Section

Every day, anywhere from 100 to several thousand serum samples arrive through the doors of the serology lab at the SDSU Animal Disease Research and Diagnostic Laboratory. A staff of five microbiologists, one faculty member, and five part-time and student workers perform a wide variety of serologic tests on serum samples from pigs, cattle, sheep, poultry, horses, and companion animals. In a given year, an average of 325,000 individual tests are run, with one year as high as 425,000 tests run.

A large proportion of tests run by the serology lab are PRRS ELISAs. In FY 2008, nearly 120,000 samples were tested for PRRS antibodies using the ELISA procedure. Next in popularity are John's ELISA's (over 66,000 tests), and the BVDV antigen capture ELISA on ear notch samples (over 17,000 in FY 2008).

The serology section at SDSU's ADRDL has been a national leader in developing Quality Control/Quality Assurance procedures for in-house review of their testing procedures. In addition to their busy workload serving veterinarians and animal caretakers across the region, the faculty and staff within the section are continually developing and assessing new serologic tests and procedures.

Section Leader: **Eric Nelson, PhD** has been the Serology Section Leader since 1995. Dr. Nelson is in his 26th year at the ADRDL, and his faculty appointment consists of 40% Diagnostic Service, 52% Research and 8% Teaching/Advising. He is responsible for the overall management of the Diagnostic Serology Section and serves as a resource for other sections within the ADRDL. His primary academic interests include classical and molecular virology, viral pathogenesis, and diagnostic assay development and



Serology Staff at SDSU: Back Row (L-R): Mary Thompson, Research Assistant; Aaron Singrey, Senior Microbiologist; Eric Nelson, Professor and Section Leader. Front Row (L-R): Lisa Hageman, Microbiologist; Craig Welbon, Senior Microbiologist; Linda Fawcett, Senior Microbiologist; Jennifer Lemon, Microbiologist. Not Pictured: Susan Holler, Naomi Ries, and Michael Dunn.

validation. Dr. Nelson has been very involved with PRRS virus research, as well as projects dealing with enteric viruses.

In an average year, over 325,000 serology tests are run at South Dakota State's Animal Disease Research and Diagnostic Lab. PRRS ELISA's are the most popular request.

Senior Microbiologists: **Linda Fawcett BS** has been in charge of the day-to-day operations of the Serology section since 1989. Linda has a degree in microbiology from SDSU. She is trained in all aspects of diagnostic serology and is

heavily involved with new test implementation.

Aaron Singrey BS, MS has bachelors and master's degrees in animal science from SDSU along with experience in genetic animal diagnostics and has been with the serology section for the past three years. In addition to his general diagnostic duties, he is responsible for Quality Assurance and Quality Control for the section.

Craig Welbon BS, has a background in AIDS and cancer research with NIH and the American Red Cross. He has been with the serology section over four years and specializes in client-specific, specialized PRRS testing.

Microbiologists: **Lisa Hageman BS**,

has degrees in microbiology and biology and experience in CWD research. She performs general diagnostic serologic testing and assists with cell cultures.

Jennifer Lemon BS, is in her third year of service with the serology section. Prior to joining the ADRDL, she worked in vaccine development and production with Fort Dodge Laboratories.

Seasonal and Part-Time: Susan Holler BS MS, has been responsible for the Chronic Wasting Disease (CWD)

testing procedures within the serology section for the past five years, and has been with the ADRDL for ten years.

Naomi Ries BS, started working with the serology section as a student. After receiving her degree in agriculture from SDSU, she continues to serve the section as seasonal help during the CWD testing season.

Mary Thompson BS, has served SDSU for the past 17 years, the last eight in the serology section running routine

serologic tests.

Michael Dunn is the current student assistant in the section. He is a microbiology major from Brookings and has worked in the section since the summer of 2008. His future plans are to work for the CDC or NIH.

The serology section is always interested in comments and feedback from their clients. They can be reached at 605-688-5171 or at

linda.fawcett@sdstate.edu. ■

Digital Coggins Test Submission and Results Service now Available Through Global Vet Link

The ADRDL is now set up to accept digital Coggins (EIA) submissions through a partnership with Global Vet Link (GVL). This allows veterinarians to submit EIA paperwork (including digital pictures) online to the ADRDL and to receive results, all through a veterinarian's account on GVL.

GVL is a data storage and document production service. The system allows you to store your data, photos and certificate information online so that it is accessible from anywhere that you have internet access--there is no software to download on your computer. The certificates that are produced are professional, legible and safe, with watermarking and state seals (when applicable) and verifiable electronic signatures.

Here is a quick overview of how the system works:

1. Sign up your clinic for service with GVL and establish an account by going to www.globalvetlink.com

2. Identify each vet within the clinic (each vet has their own log-in but can access any information within their

clinic's account).

3. Personnel at the clinic are trained by GVL on how to enter owner and animal, and on uploading digital photos for use on EIA (Coggins) certificates. Once the data on an animal (including pictures) is in the system, it is stored for future use.

4. Once the data and photos are stored and an EIA test ordered, the system will generate a lab submittal form and forward the information to the SDSU ADRDL.

5. Print the lab submittal form and send it with the blood sample to the ADRDL.

6. The lab results will show on a certificate through the GVL website--the lab tech will include their digital signature so that the certificate is immediately available.

7. You then can send the certificate to the client or give them access to a free Animal Owner's Account on GVL where they can go online and download the certificate themselves.

Costs:

1. The usual ADRDL fee for the EIA

tests is billed as usual.

2. GVL accounts involve annual, monthly, and per-certificate fees, depending on the number of vets in the practice and number of tests run per year. These fees cover digital form creation, information transfer to the lab and state, and data storage.

For more information, visit www.globalvetlink.com, or call 515-296-0861. ■



James Bailey Conference Held February 14 at SDSU

Wildlife disease and wildlife-livestock interactions were the theme of the annual James Bailey Herd Health Conference held at the ADRDL on Saturday, February 14. The focus of the morning session was on the rapidly expanding game bird industry in the state, with addresses by Adam Shumaker, owner of Shumaker Ringnecks of Howard, SD, outlining current management practices; Dr. Rob Porter, veterinary pathologist with the University of Minnesota, detailing diseases of upland game birds, and Dr. Fred Hubbard, Miller Veterinary Clinic, discussing the ways his clinic interacts and serves the game bird industry of the region. Drs. Zeman and Graham from the SDSU ADRDL addressed the group on the lab's dealings with poultry and game bird producers of the region.

Deer and livestock interactions and the potential for transmission of BVDV virus was discussed by SDSU's Dr. Chris Chase. He outlined the ongoing research that continues to examine the significance of BVDV-PI deer in transmission of the virus to cattle. Researchers to date have been successful at re-creating persistently infected deer by infecting does during the first trimester of gestation. Re-

searchers have also been able to demonstrate transmission of BVDV from PI cattle to pregnant deer, in addition to transmission from PI deer to pregnant deer. Current projects continue to examine transmission between deer and cattle, as well as the scope of deer-cattle interactions in the real world.

Tuberculosis and the role of white-tailed deer in its spread were the subjects of a talk by Dr. Erika Butler from the Minnesota Department of Natural Resources. That agency has gone to great lengths to reduce deer populations in the areas that have contained TB-positive cattle herds. Liberalized tag policies and employment of sharpshooters on the ground and in the air have significantly reduced deer populations in those areas. Overall, so far efforts seem to be successful. According to Butler, over 5,300 deer have been tested, with 24 positive for TB. None of the positive deer have been detected outside the TB zone in northern Minnesota.

Tom Kirschenmann from the South Dakota Department of Game, Fish and Parks wrapped up the afternoon with an analysis of current wildlife disease issues within the state, including Chronic Wast-



Dr. Jim Bailey, Professor Emeritus and former SDSU Extension Veterinarian, addresses attendees at the annual James Bailey Herd Health Conference held on the SDSU Campus February 14, 2009.

ing Disease, Avian Influenza, and Epizootic Hemorrhagic Disease, among others. ■

SDSU Extension Veterinarian Receives Merit Award

The South Dakota Cooperative Extension Service honored members of their organization at the 2008 Awards and Recognition Program Oct. 16 in Brookings, S.D.

The South Dakota Extension Specialists' Association recognized Russ Daly, Extension veterinarian, with its 2008 Certificate of Merit Award, given to a member of the association with less than five years' service as a specialist with the South Dakota Cooperative Extension Service.

Roger Gates, Extension range management specialist, was the recipient of

the 2008 Distinguished Service Award. The award goes to a member of the South Dakota Extension Specialists' Association with at least five years of service.

The awards are given annually to SDSU faculty members who have extension roles, to recognize service to extension educators, other extension specialists, and to the citizens of South Dakota in fulfilling the role of extension to provide science-based information and practical solutions to everyday questions and problems. ■



Nobel Prize Winner

(Continued from page 1)

Montagnier also lectured to a standing room only crowd of nearly 400 people in SDSU's Volstorff Ballroom.

In an interview from SDSU with South Dakota Public Broadcasting-Radio, Montagnier said he is interested in a cell culture method Young has developed in his work with prion diseases. Those are diseases spread by infectious agents called "prions" and include mad cow disease, Creutzfeldt-Jakob disease in humans, chronic wasting disease in deer and elk, and scrapie in sheep.

Though Young's focus has been on prion diseases, his new method could have applications in studying the early stages of other diseases, Montagnier said.

"I've known about Dr. Young's work, and this is why I am here, just to start some collaboration with him," Montagnier said. "We could extend this notion to other types of agents, of course to some of the viruses, bacteria, and also the prion agents. I'm interested in a collaboration with Dr. Young to try to detect in his culture some viral agents by some new technology I have designed first for HIV and bacteria."

Montagnier already works closely with Chronix Biomedical Inc., a San Jose, California-based company with whom Young also collaborates. Chronix Biomedical has products for the human and veterinary chronic disease markets. The company recently opened a research laboratory in Brookings.

Howard Urnovitz, chief executive officer and chief scientific officer for Chronix Biomedical, also spoke with South Dakota Public Broadcasting from SDSU.

"I've worked with Dr. Montagnier for almost 20 years now on AIDS projects and we've started to look at various different signals from the immune system in the prion diseases. When I asked who would be the best experts in the States on prion diseases, I was led to Dr. Young's

lab here in Brookings," Urnovitz said.

In working with prion diseases, Young has developed a model for studying the early stages of chronic diseases, specifically in the areas of the lymph nodes called the germinal centers. During an immune response, the germinal centers stimulate the cells that produce specific antibodies.

"We developed some years ago a technology to culture the actual cells that are targeted by the prions, called follicular dendritic cells, or FDCs," Young said. "We cultured those first from sheep, and later from deer and we're now working on some other species as well. We found

One of the things we are discussing with Luc is how we might work together on this toward better understanding the role of FDCs and germinal centers as a whole in chronic diseases."

Journalist Paul Guggenheimer's interview with Nobel Prize winner Luc Montagnier, SDSU scientist Alan Young, and Chronix Biomedical CEO Howard Urnovitz is available at the South Dakota Public Broadcasting Web site, <http://www.sdpb.org/>. Click on "Radio" at the left side of the page, then on "Dakota MIDDAY." ■

(From SDSU University Relations)

"I've known about Dr. Young's work, and this is why I am here, just to start some collaboration with him," Montagnier said.

that we were able to actually infect those cells with prions such as scrapie and chronic wasting disease. Although we started this really to look at prions, the ramifications of looking at FDCs in cell culture extend beyond that."

In collaboration with Rural Technologies Inc., a Brookings-based company, Young is trying to develop the technology as a diagnostic assay for scrapie and for chronic wasting disease.

Young is also working with Chronix Biomedical to learn more about the molecular effects when FDCs are infected by prions — what genes are altered, or how are the messages between cells are altered as a result of infection.

That is where SDSU has been able to establish a link with Nobel Prize-winner Luc Montagnier.

"Luc actually won the prize in conjunction with another person for his discovery of the HIV virus. He's very interested in how the cells of the immune system respond in chronic diseases," Young said. "We want to look at how in general these FDCs may respond to infections.

R is for Research

(Continued from page 1)

Montagnier. He was recognized for the discovery of human immunodeficiency virus along with Françoise Barré-Sinoussi. Dr. Montagnier presented a fascinating lecture to over 400 faculty, students and staff, as he described the process of unraveling the cause of AIDS, back in the early 1980's. Dr. Montagnier came to Brookings to collaborate with Veterinary Science researcher Dr. Alan Young. They have a mutual interest in developing an ante mortem test for prion diseases. Industry partner Chronix Biomedical and its president Dr. Howard Urnovitz sponsored the visit. It was an exciting week to highlight the importance of the **R** in our name, and the synergy between research and the diagnostic laboratory continues. ■

Enrollment Jumps for “Introduction to Veterinary Medicine” at SDSU

If enrollment in “Introduction to Veterinary Medicine (VET 103),” a course designed to introduce the profession of veterinary medicine to interested students at South Dakota State University, is any indicator, interest in veterinary medicine is growing among college students. Student numbers jumped from 49 students in 2007 to 70 students in 2008. The course is team-taught during the fall semester by the members of the SDSU Veterinary Science faculty with pre-vet advising responsibilities: Drs. Chris Chase, Russ Daly, Alan Erickson, Tanya Graham, Larry Holler, Dave Knudsen, Dale Miskimins, Regg Neiger, and Dave Zeman.

The course goal, as outlined by the teaching team is, “To inform, inspire, and prepare students for success in pursuing careers related to veterinary medicine.” Four objectives for the course were identified:

1. Position pre-veterinary students for academic success at SDSU.
2. Inform and prepare pre-vet students for applying to colleges of veterinary medicine.
3. Provide insight to students re-

garding the lifestyle and other aspects of veterinary practice today and in the future; support students’ interest in becoming veterinarians.

4. Inform students about other veterinary-related careers.

The students, predominantly incoming freshmen (80% female, 20% male), indicated strong interest in veterinary

medicine upon entering the class: on a scale of 1 to 10, their answer to the question, “how interested are you in becoming a veterinarian?” with 10 being

“absolutely, without a doubt,” averaged at 8.52.

As a means of meeting the course objectives, a variety of presenters from private practice, SDSU, and related industries addressed the class. Topics and speakers included:

- Rewards of private practice—Drs. Corale Dorn, Dell Rapids; Kevin Klozenbucher, Huron; Michelle Jensen, Harrisburg; and Dick Roggen, Sioux Falls.
- Colleges of Veterinary Medicine requirements and application procedures – Dr. John Thomson, Dean, Iowa State University CVM; Larry Bjorklund, University of

Minnesota.

- What to expect from your advisor and what they should expect from you.
- Study skills, access to tutoring, and chemistry help sessions – faculty from SDSU College of General Studies and

Chemistry Department.

- Tips for success from SDSU senior pre-vet students; summer internship tips from upperclass animal science students.
- Industrial, diagnostic, and research opportunities in veterinary medicine—Drs. Alicia Zimmerman, RTI; Dave Knudsen, Chris Chase, and Mike Hildreth, SDSU.

A post-course survey revealed that 74% of the students indicated they had similar or greater interest in veterinary medicine at the end of the course, despite many of them having just completed the rigors of their first college semester of coursework. Seventy-seven (77) percent indicated that information presented in the course influenced their interest in the profession.

SDSU continues to be blessed with incoming students with great interest in veterinary medicine. The practitioners and others who gave their time to speak to the students had an extremely positive effect on these student’s career goals, and it is the hope of all of us that a good number of these students will become our veterinary colleagues in the future. ■

Compared with the beginning of the semester, 74 % of students enrolled in VET 103 were just as or more interested in veterinary medicine as they were at the end of the semester.

Sampling Size, Epidemiology Software Available Free on the Web

How many blood samples should I take? If I sample 15 animals instead of 20, how much will that affect my confidence level in the results? Veterinarians are faced with these questions on a regular basis. Tools that can help in making these decisions are easy to access and use and are available as “freeware” on the internet.

1. Win Episcopo. Win Episcopo is a software program for quantitative veterinary epidemiology. It has a number of tools for analysis of epidemiologic studies, but it also has a useful section on

sample size. It is available at:

www.clive.ed.ac.uk/winepiscopo/

2. Survey Toolbox. Survey Toolbox is a suite of software programs which are designed to make planning, conducting and analyzing statistically valid, efficient and practical animal health surveys easier. These programs were written for veterinarians in developing countries, but many have uses for anybody involved in planning surveys. It can be downloaded at: http://www.ausvet.com.au/content.php?page=res_software#st ■

"Dumb Things Animals Sometimes Eat": Ag Day at Washington Pavilion

Chocolate, golf balls, car batteries, and nails were all on display at the Veterinary Science department booth that was a part of Ag Day 2009 at the Sioux Falls Washington Pavilion on Saturday, March 21. Pre-veterinary students with assistance from Extension Veterinarian Russ Daly set up the booth and engaged children and parents alike with information about the potentially harmful items that pets and livestock may encounter.

The pre-vet students put special emphasis on harmful substances that pets may encounter, such as chocolate, antifreeze, and Christmas tree tinsel. Children especially were amazed that cows can eat

wires and nails and about the use of rumen magnets in treatment. Adults were alerted to the possibilities that worn steel-belted tires used as hay feeders, and old batteries can be the source of hardware disease and lead poisoning.

Chocolate bars (for the kids, not their pets) and rumen magnets were handed out to kids and their parents as reminders to keep their animals safe and of the importance of having a strong relationship with their local veterinarian.

Ag Day 2009 is an annual event sponsored by the Washington Pavilion with support from state ag groups, in celebration of National Agriculture Week. ■



Pre-vet Students manning the booth: (L-R): Jennifer Bosch, So., Lester, IA; Andrew Rogen, So., Brandon; Jade Lanier, Jr., Harrisburg; Ethan Spronk, Fr., Edgerton, MN.

Calendar of Events

April 2 (Noon-1 PM)

Boar Stud Biosecurity and Health Seminar
Room 126, Animal Science Building, SDSU

Presented by Dr. Darwin Reicks, Swine Vet Center.
(605) 688-6589 for details

April 2-4

Academy of Veterinary Consultants Spring Meeting
Oklahoma City Marriott, Oklahoma City, OK
<http://www.avc-beef.org>

May 27-29

International Conference on the Use of Antimicrobials in Cattle Production, Kansas State University, Manhattan, KS
<http://www.isbcw.beefcattleinstitute.org/>

June 7-9

SDVMA Summer Meeting
Ramkota Inn & Convention Center, Pierre, SD
Recreation opportunities on Monday include team roping, fishing, golf.
(605) 688-6649 or www.sdvmed.org

June 11

Cattle Handling Session with Temple Grandin
Even Farm, Humboldt, SD

Check <http://vetsci.sdstate.edu/vetext> as details become available.

June 20-24

Jackson Hole Veterinary Rendezvous
Snow King Resort, Jackson WY, <http://www.jhvr.org/>

June 21-23

Montana VMA Summer CE Meeting
Crowne Plaza, Billings, MT, www.mtvma.org

August 9-12

South Dakota Veterinary Medical Association Annual Meeting, Ramkota Inn, Sioux Falls, SD (605) 688-6649 or www.sdvmed.org

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SOUTH DAKOTA STATE UNIVERSITY
SDSU Veterinary Science Department
Animal Disease Research & Diagnostic Laboratory
Box 2175- North Campus Drive
Brookings, SD 57007-1396
Phone: (605) 688-5171
Fax: (605) 688-6003
Website: <http://vetsci.sdstate.edu>

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Animal Health MATTERS

The SDSU Veterinary Science Department conducts research, teaching, professional service, and extension service to South Dakota and the surrounding region. Entities within the department include the South Dakota Animal Disease Research and Diagnostic Laboratory, the Olson Biochemistry Laboratory, and the Center for Infectious Disease Research and Vaccinology.

The South Dakota Animal Disease Research and Diagnostic Laboratory is a full-service, all-species diagnostic laboratory accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD). The AAVLD accreditation program complies with international expectations for quality diagnostic services under the guidance of the World Organization for Animal Health (the OIE). The ADRDL collaborates with the USDA National Veterinary Services Laboratory on many federal disease monitor and eradication programs and is a member of the National Animal Health Laboratory Network. For information regarding the laboratory's Quality System, contact Rajesh Parmar – ADRDL Quality Manager, at 605 688 4309.

Editor: Russ Daly, DVM

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